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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,607	10/23/2003	Tsuyoshi Maeda	117304	6772
25944	7590	02/03/2006		
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			EXAMINER SCHECHTER, ANDREW M	
			ART UNIT 2871	PAPER NUMBER

DATE MAILED: 02/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/690,607

Applicant(s)

MAEDA, TSUYOSHI

Examiner

Andrew Schechter

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,7,15,18,21-23,29-31 and 34-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,7,15,18,21-23,29-31 and 34-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/14/05, 12/21/05</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 21 December 2005 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 7, 15, 18, 21-23, 29, 30, and 34-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Jisaki et al.*, U.S. Patent No. 6,753,939 in view of *Yano et al.*, U.S. Patent Publication No. 2002/0071070, in view of *Terashita et al.*, U.S. Patent No. 6,201,592.

Jisaki discloses [see Fig. 1, for instance] a liquid crystal display device comprising a liquid crystal layer [3] between a first substrate [1] and a second substrate [2], one dot [one pixel] including a reflective display region [5] and a transmissive

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display region [6], the liquid crystal layer include a nematic liquid crystal [see Fig. 2] having negative permittivity anisotropy oriented substantially perpendicularly to the substrates [col. 6, line 61 – col. 7, line 20], a first retardation film [8] and a first polarizer [10] disposed in this order on the outer side of the first substrate, a second retardation film [9], a second polarizer [11] and an illuminating device [12] being disposed in this order on the outer side of the second substrate, and at least one of the first retardation film and the second retardation film having optical biaxiality [col. 8, line 65].

Jisaki does not explicitly disclose that the sum $W1$ satisfies $0.5xRt \leq W1 \leq 0.75xRt$, and that $n_{x1} > n_{y1} > n_{z1}$ and $n_{x2} > n_{y2} > n_{z2}$, as recited in the last paragraph of claim 1. *Yano* does disclose [see paragraph 0028, etc.] the use of retardation films satisfying $n_x \approx n_y > n_z$, and teaches that such optical devices should have a sum $W1$ satisfying $0.5xRt \leq W1 \leq 1.3xRt$, or more preferably $0.7xRt \leq W1 \leq 1.0xRt$, ranges which overlap the recited range. In such cases of overlapping ranges, a *prima facie* case of obviousness exists [see MPEP 2144.05]. It would have been obvious to one of ordinary skill in the art at the time of the invention to have the sum $W1$ within the recited range, and have the films satisfy $n_x \approx n_y > n_z$, motivated by the teaching of *Yano* that this is preferred in order to achieve a wide viewing angle [see paragraph 0028, etc.].

As noted above, *Yano* teaches this range in the context of retardation films which satisfy $n_x \approx n_y > n_z$ rather than $n_x > n_y > n_z$. However, *Terashita* [col. 18, lines 41-48] is evidence that it is an art-recognized equivalent for retardation films to have $n_x \approx n_y > n_z$ or $n_x > n_y > n_z$. (This is logical, since $n_x \approx n_y$ of course includes some values around $n_x = n_y$ for which $n_x > n_y$.) It would have been obvious to one of ordinary skill in the art at the

time of the invention to use retardation films with $n_x > n_y > n_z$, motivated by the equivalency evidenced by *Terashita*.

Claim 1 is therefore unpatentable.

Both retardation films may be biaxial [col. 8, line 65], so claim 2 is also unpatentable. The retardation values (or equivalently phase differences) of the two retardation films are equal [col. 8, lines 50-54, for instance], so claim 15 is also unpatentable. The retardation films are $\lambda/4$ plates in the visible wavelength range [for instance at 550 nm, where the phase difference would be 138 nm], so the retardation values are between 100 nm and 160 nm, so claim 18 is also unpatentable.

The thickness of the liquid crystal layer in the reflective display region is smaller than the thickness in the transmissive region [see Fig. 1], so claim 7 is also unpatentable. The retardation films are $\lambda/4$ plates in the visible wavelength range, so $R(450) / R(590)$ is smaller than 1, so claim 21 is also unpatentable. The polarizers are orthogonal [col. 8, lines 30-31], so claim 22 is also unpatentable. The phase difference values of the first and second retardation film are substantially equal [col. 8, lines 50-54], so claim 23 is also unpatentable. There is a reflection layer [25], having an irregular configuration for performing scattered reflection [see Fig. 4], so claims 29 and 30 are unpatentable. There is a protuberance [13] formed on an electrode formed on the inner surface of one of the substrates, adjacent the liquid crystal, so claim 35 is also unpatentable. There can instead be an electrode having an opening [50, see Fig. 16] to drive the liquid crystal, on the inner surface of one of the substrates, adjacent the liquid crystal, so claim 34 is also unpatentable. There are at least two liquid crystal directors

in one dot [pixel] when the liquid crystal is driven by an electrode [see Fig. 2], so claim 36 is also unpatentable. This is electronic equipment, so claim 37 is also unpatentable.

Claims 38 and 39 differ in reciting that the retardation of the first film satisfies $0.5xR_r \leq Ret\#1 \leq 0.75xR_r$, where R_r is the retardation in the reflective region. Since the reflection region has thickness d in *Jisaki* and the transmissive region has thickness $2d$, the retardation in the reflection region is half that in the transmissive region, so we have $R_r = \frac{1}{2}R_t$. We also have $Ret\#1 = \frac{1}{2}W1$. This means that $0.5xR_t \leq W1 \leq 0.75xR_t$ is equivalent to $0.5xR_r \leq Ret\#1 \leq 0.75xR_r$ for the transflective device of *Jisaki*, so this limitation is met as discussed above, and claims 38 and 39 are also unpatentable.

4. Claims 1, 2, 22, 29-31, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Kubo et al.*, US 2001/0055082 in view of *Jisaki et al.*, U.S. Patent No. 6,753,939 in view of *Yano et al.*, U.S. Patent Publication No. 2002/0071070, in view of *Terashita et al.*, U.S. Patent No. 6,201,592.

Kubo discloses [see Figs. 13 and 15, for instance] a liquid crystal display device comprising a liquid crystal layer [5] between substrates, with reflective and transmissive display regions, nematic liquid crystal having negative permittivity anisotropy oriented substantially perpendicularly [see Fig. 15 and discussion thereof], a first retardation film [7] and first polarizer [6] in this order, a second retardation film [10] and a second polarizer [9], and an illuminating device [see Fig. 13] in this order.

Kubo does not disclose that at least one of the retardation films has optical biaxiality; it appears that the retardation films are both uniaxial. *Jisaki* discloses, for an analogous device, using either uniaxial or biaxial retardation films [col. 8, lines 64-65].

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This is evidence that optical uniaxiality and biaxiality are considered art-recognized equivalents in this specific context; it would therefore have been obvious to one of ordinary skill in the art at the time of the invention to use biaxial films in the device of *Kubo*, motivated by the art-recognized equivalence of the two. Satisfying the additional limitation regarding $n_x > n_y > n_z$ and W1 would have been obvious to one of ordinary skill in the art at the time of the invention in view of *Yano* and *Terashita* as discussed above.

Claims 1 and 2 are therefore unpatentable.

Kubo discloses crossed polarizers, so claim 22 is also unpatentable. *Kubo* discloses an irregular reflection layer, so claims 29 and 30 are also unpatentable. *Kubo* discloses that the retardation films are orthogonal to each other in the X-axis direction, and form 45° angles with respect to the polarizers [see Fig. 15], so claim 31 is also unpatentable. *Kubo* discloses electronic equipment, so claim 37 is also unpatentable.

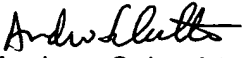
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Schechter whose telephone number is (571) 272-2302. The examiner can normally be reached on Monday - Friday, 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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27 January 2006